

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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In the Matter of

Amendment of Part 95 of the
Commission's Rules to Allow
Interactive Video and Data
Service Licensees to Provide
Mobile Service to Subscribers

) FEDERAL COMMUNICATIONS COMMISSION
) DEPT. OF COMMERCE

) WT Docket No. 95-47

) DOCKET FILE COPY ORIGINAL

PETITION FOR PARTIAL RECONSIDERATION

I. INTRODUCTION AND SUMMARY

On May 5, 1995, in response to a petition filed by EON Corporation ("EON"),¹ the Commission released a *Notice of Proposed Rule Making* ("*Notice*")² asking for comment on several significant potential changes to the technical and operational aspects of the Interactive Video and Data Service ("IVDS"). The *Notice* sought comment on the Commission's proposals to amend Part 95 of the rules to allow Interactive Video and Data Service ("IVDS") licensees to provide mobile service to subscribers on an "ancillary" basis. The *Notice* also raised issues concerning power limits, "duty cycles" and communications among various IVDS facilities.

On July 11, 1995, the National Association of Broadcasters ("NAB")³ filed Reply Comments in this proceeding. In this submission NAB emphasized that prevention of interference to television channel 13 should be of overriding importance as the

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¹ The EON petition, filed May 11, 1994, was assigned the file number RM-8476 by FCC *Public Notice* released May 19, 1994 (Report No. 2011).

² *Notice of Proposed Rule Making* in WT Docket No. 95-47, 10 FCC Rcd 4981 (May 5, 1995).

³ NAB is a nonprofit, incorporated association of television and radio stations and networks which serves and represents the American broadcast industry.

Commission is considering proposed modifications to the IVDS rules. NAB's reply comments argued that the Commission should maintain a 100 milliwatt power limit on portable response transmitter units ("RTUs") but that fixed RTUs could remain at their 20 watt limit, provided that the Commission retained its five-seconds-per-hour "duty cycle" limitation.

Moreover, NAB argued that the five-seconds-per-hour duty cycle limitation should be placed on fixed and mobile IVDS operations, and regardless of whether these operations occur in the service areas of Channel 13 television stations. NAB pointed out that, because the introduction of advanced television, which will require significant changes in the allotment of television channels around the country, it would be unwise for the FCC to authorize IVDS facilities with more liberal duty cycle characteristics (let alone higher power limits) only to have these services later cut back due to ATV implementation and the continuing need to protect Channel 13 facilities.

Additionally, the NAB reply comments urged the Commission to reject regulatory alternatives that would diminish the ability of consumers to employ the IVDS for the purposes for which it was created: an interactive service tied to over-the-air broadcasting. That is, NAB argued that the Commission should maintain the IVDS for its intended purpose and to allow mobile operation only on an "ancillary" basis.

In this Petition for Partial Reconsideration, NAB addresses those portions of the Commission's *Report and Order*⁴ that appear to compromise the principles upon which NAB based its reply comments in this proceeding -- principles that should govern the IVDS and should ensure non-interference to Channel 13 television operations. It is our view that the Commission, while it has acknowledged and addressed these interference

⁴ See *Report and Order* in WT Docket No. 95-47, FCC 96-224, released May 30, 1996, 61 Fed. Reg. 32710 (June 25, 1996).

and “service metamorphosis” concerns, has adopted a regulatory structure that is insufficient on these points. Specifically, and as addressed below, NAB urges the FCC to revise its decision concerning power limit measurement and duty cycle applicability and to clarify those portions of its decision that deal with the ancillary mobile use of IVDS operations as well as the “status” of certain CTS operations.

II. THE USE OF “MEAN POWER” LIMITS MUST BE REVISITED

The decision in the *Report and Order* to convert IVDS power limits from a “peak power” to a “mean power” measurement methodology is technically imprecise, inadequately substantiated and likely would result in vast amounts of interference to the reception of television Channel 13. Use of a “mean power” measurement would permit an undefined peak level, making invalid the prediction of expected protection for Channel 13 viewers. The largest defect in the “mean power” rules adopted in the *Report and Order* is that they would allow, given the duty cycle allowed for typical IVDS operations, at least 72 Watt peak RTU transmitters and 14,400 Watt peak CTS transmitters, a result that clearly was not intended by the Commission. Clearly, the FCC either must return to a peak power measurement or establish a mean power measurement procedure that will ensure equivalence to the peak power levels previously employed.

It is technically incorrect to use mean power level ratios for predicting interference. Interference to television reception is most visible when the peak of the undesired signal is presented to the desired video or audio, making the peak level of the interfering signal *the* technically valid characteristic to use in the regime of power limitation. A change in the measurement method from peak to mean power, without reducing the power level limit on a transmitter, effectively would increase the allowed

emitted energy. There is no basis established for permitting an effective increase in IVDS output power.

The degree of effective peak power increase, as compared to the measured mean value, is a function of the spectral shape of the signal, the measurement bandwidth and the time over which the measurement is permitted. The factors that must be considered when converting from a peak value to an appropriate mean or average value include the long-term duty cycle, the measurement bandwidth, the peak to average of the frequency spectrum, and the peak to average (time based) during transmissions. As the rules now read, only the long-term duty cycle has been considered directly; but that has not been constrained properly, from a measurement perspective. The other factors were not even addressed.

From the record of this rulemaking proceeding, it is apparent that the entire base time of the long-term duty cycle should not be considered in making the mean power measurement. However the modified rules rely on the definition of mean power found in Section 2.1 of the Commission's Rules. This definition of "mean power (of a radio transmitter)" states:

"The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions."⁵

In the worst case, this broad definition can be interpreted to allow averaging a power measurement for five seconds over an entire hour, because it only constrains the lower limit of the measurement period. An effective increase in permitted peak power can be calculated by using the formula $10 \cdot \log(T_1/T_2)$, which in this case results in a 28.57 dB increase.

⁵ See 47 C.F.R. § 2.1.

It is clear that the commenters in this proceeding expected the average power to be measured over the period of active RF transmission, although that methodology was not precisely established in the rules. The base time period for the mean power measurement must be defined precisely in order to be able to make a technically-sound prediction of interference due to the peak values of the transmission. In addition, because the power limits in the Part 95 rules are stated in ERP, and the Section 2.1 definition is for energy into the transmission line, the actual power value into the transmission line to obtain the level allowed for IVDS devices is left undefined. Conversion factors for antenna gain and other transmission system characteristics are needed to make this determination; but they too are not defined.

Simply addressing the long-term duty cycle problem is inadequate; rather, a precise definition of the measurement procedure is necessary. While some systems may have very short transmissions, these periods are not specified in the rules. Also, the new rules allow for communication directly from a CTS to another CTS, with undetermined transmission characteristics, and in some cases no duty cycle restrictions. These characteristics change the relationship of peak to mean power and must be evaluated when establishing the allowed power level. If the actual transmission period can vary, then that also must be established and the impact quantified.

The bandwidth used to measure the signal power also must be specified. The degree of “match” between the measurement instrument and the signal bandwidth must be factored into the impact of the peak to mean power conversion ratio. Similarly, procedures for handling the “turn on” and “turn off” boundary conditions must be clearly established. Some devices exhibit peak over-shoot when first turned on; some others have long “on” or “off” transitions, potentially affecting the true peak-to-mean ratio.

Finally, some signals with a “flat” spectrum signature can have instantaneous peak to mean ratios that are significant. No record was developed in this proceeding to show what the peak to mean ratios during the “on” portion of the duty cycle is for the IVDS signals from various system vendors. But, that information is critical to the matter at hand, which in turn is related to effective interference protection for television Channel 13 facilities.

The Commission must either return to the previously used peak power measurement criteria or develop a detailed measurement procedure that leaves no room for misinterpretation to substantiate an equivalent mean power measurement. Failing to do so makes predictions of protection for the public at least invalid, with dangerous interference to television Channel 13 a certain consequence.

III. VIEWERS NEAR THE PREDICTED CHANNEL 13 GRADE B CONTOUR MUST NOT BE SUBJECTED TO INCREASED INTERFERENCE

Independent from the peak versus mean power issue discussed above, the Commission’s *Report and Order* significantly has increased the likelihood of interference for those viewers who live near a Channel 13 Grade B predicted contour. The Commission must make amendments to its IVDS *Report and Order* and appended rules that will correct these problems.

By adopting a service area-based duty cycle criterion, as contrasted with a location-based criterion, the Commission has acted as if there is a service area barrier to signals at the predicted edge of the Channel 13 predicted Grade B contour. The adopted rules fail to take the reality of the physics of RF propagation into account in that they eliminate the duty cycle requirement based merely upon the presence of TV Channel 13 predicted Grade B overlap in an IVDS service area. The signal levels produced by either

an RTU or a CTS, when near enough to a residence, can be expected to cause interference. There may be differing views about the number of locations where this interference is perceptible or annoying. But, it cannot be disputed that dropping the duty cycle requirement will increase dramatically the impact on those television receivers where the IVDS signal is strong enough to cause interference. The viewer who is located near the predicted Grade B contour and wishes to view a signal that may be below Grade B levels will be ignored, and will be even more severely impacted without the ameliorating effect of a low duty cycle.

In this regard we must take issue with the Commission's view that the duty cycle requirement is not an important factor in reducing the possibility of untoward interference to Channel 13 reception. In the *Report and Order* the Commission, citing its 1992 IVDS decision,⁶ suggests that:

....[T]he duty cycle rule, however, was not one of the principal ways we intended to minimize the potential for interference. Rather, it serves as an *additional safeguard*. (emphasis added)⁷

However, a reading of the 1992 FCC IVDS decision indicates that the duty cycle requirement, though *additional* to power limits and other features of the Commission's IVDS regulatory program is a central element of dealing with the Commission's stated "principal technical concern"⁸ over interference to other services.⁹

⁶ See *Report and Order* in Gen. Docket No. 91-2, 7 FCC Rcd 1630.

⁷ *Report and Order*, *supra* note 5, ¶22.

⁸ *Report and Order* in Gen. Docket No. 91-2, *supra* note 7, ¶37.

⁹ In this regard NAB must address a separate FCC decision which will have a bearing on the effective protection of Channel 13 television reception from untoward interference from IVDS operations. That decision is the *Order*, released June 21, 1996 (DA 96-925), granting a clarification/waiver request filed by an IVDS licensee. That *Order*, contrary to a reasonable interpretation of earlier FCC pronouncements on the matter, states that the required notification to TV households within two weeks of an IVDS service's initiation of service need not be accomplished by mail but by any "reasonable form of notification." There the FCC drew an inapt analogy to the newspaper or broadcast notification requirements applicable to the filing of certain broadcast operations (*see* Section 73.3580 of the Commission's Rules). However, and is reflected in myriad documents filed at the Commission, the source of interference to television stations is

NAB strongly urges that the duty cycle requirement not be relaxed for either CTS or RTU facilities *unless* the fixed site is over 10 miles *outside* the Channel 13 predicted Grade B contour. Because the use of mobile RTUs is largely undefined, operators of such devices can be expected to carry them across the boundaries into or near residences with lower Channel 13 signal levels. Therefore, mobile units should *always* have a duty cycle requirement, unless the location of their operation is individually and electronically constrained¹⁰ to individual service areas far outside the Grade B contour.

IV. THE "BASIC NATURE" OF IVDS SHOULD BE MAINTAINED; THE STATUS OF CERTAIN CTS FACILITIES SHOULD BE CLARIFIED

Though the Commission has decided to allow mobile use of IVDS operations -- a basic concept that NAB did not oppose, in that such mobile facilities can be used to afford interactive communications *vis-à-vis* radio broadcast programming and commercial announcements -- it still is important for the IVDS not to turn into yet another "wireless telephone service" or another service duplicative of other FCC licensed facilities. To a degree, the Commission's imposition of power limits and certain duty cycle limitations, as well as the prohibition of IVDS connection with the Public Switched Network, have worked to ensure that the IVDS retain its basic character. However, NAB believes some additional steps must be taken.

****footnote continued from previous page****

very difficult for viewers to ascertain. And without an effective means for viewers to obtain information about the possible source of such information, the viewer likely will not have the slightest idea of how to seek recourse. Thus, the delivery of written notice to potentially affected viewers, even if on a "sampling" basis rather than the written notification of all such viewers, would provide -- through their response -- information that an IVDS licensee and the Commission would need to evaluate whether an IVDS operation was causing interference and whether the efforts of the IVDS licensee to resolve such interference was sufficient.

¹⁰ Any such constraints should be mandated to prevent communications from being possible with other service areas' CTS facilities.

We urge the Commission to undertake annual reviews, at least for the three years following the effective date of its revised IVDS rules, of the characteristics of, and services provided by, those holding IVDS licenses. Such reviews are critical to ensuring that IVDS licensees not employ the rule changes adopted in this proceeding to create a communications service wholly unintended by the Commission or unnecessarily duplicative of service provided by other licensed communications operations.

As an additional matter where regulatory oversight and clarification is needed concerns the modification of the “CTS to CTS” permitted communications in revised Section 95.805 (b) of the Rules. The Commission now permits direct communication from one fixed cell base station to another fixed cell base station. This communication previously was allowed only on a *secondary* basis. As revised in the appendix to the *Report and Order*, such CTS/CTS communication simply is listed as “permitted” in Section 95.805(b). The *Report and Order*, however, describes this communication as permitted “on a primary basis.” Revised Section 95.805 should be altered once again to make clear that operation under subsection (b) remains subject to paragraph 95.861 interference regulation.

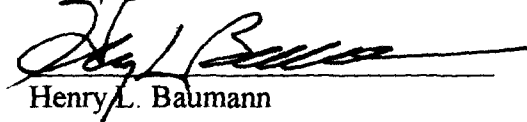
V. CONCLUSION

For the reasons stated herein, NAB urges the Commission to modify its newly-revised regulatory scheme for IVDS. These recommended, additional rule changes better will ensure non-interference to Channel 13 television reception and will provide greater assurances that IVDS will perform the functions and services intended by the Commission.

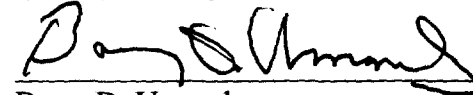
Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Henry L. Baumann", written over a horizontal line.

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